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14. *M. kolesnikovi* from *Coregonus fera*, vid. Kolesnikoff, 1866.
15. *M. linearis* from *Pseudoplatystoma fasciatum*, vid. Müller, 1841.
16. *M. schizurus* from *Esox lucius*, vid. Müller, 1841.
17. *M. creplinii* from *Gymnocephalus cernua*, vid. Creplin, 1842.
18. *M. diplurus* from *Lota lota*, vid. Bütschli, 1882.
19. *Chloromyxum mucronatum* from *Lota lota*, vid. Müller, 1854.
20. *C. incisum* from *Raja batis*, vid. Müller, 1851.

C. W. STILES.

Stiles' and Hassall's Cestodes.—The publication by Dr. Stiles of several preliminaries, notably one in the *Centralblatt für Bacteriologie und Parasitenkunde*, 1893, No. 14–15, has led helminthologists to look with interest for the appearance of his revision of the Cestodes which has just been issued.¹ The letter of transmittal by the Chief of the Bureau calls attention to the importance of accurate knowledge as to specific limits, since “every separate species has a separate source of infection,” and remarks truly that this paper “covers the results of a more thorough and extensive study of the tape-worms of cattle and sheep than has ever before been attempted.”

Both authors are responsible for the bibliography and for the work on new species, Dr. Stiles, however, alone for the studies on species already known. The work is based on a careful and exhaustive study of internal anatomy, not only of our own forms, but also of the foreign species. In almost every instance the original types have been consulted with the result that now for the first time the character and limits of some of Rudolphi's species are known. In this connection the importance of preserving the type specimens cannot be too strongly emphasized. Dr. Stiles' experiments have shown that different methods of preservation result in such differences in external appearance and proportions, that no dependence can be placed on these data for specific determinations, the only safe generic and specific determinations are those based on internal anatomy. Careful study along this line has yielded unlooked for results. The topographical anatomy of the excretory system was shown in the preliminary already cited to be of great value in separating the genera in the family of the Tæniidæ and it forms the basis of the division employed in the present paper.

In the adult tape-worms of sheep and cattle, Dr. Stiles recognizes four genera:

¹A Revision of the adult Cestodes of Cattle, Sheep, and allied animals. By C. W. Stiles, Ph. D., and Albert Hassall, M. R. C. V. S. U. S. Dept. of Agr., Bureau of Animal Industry, Bulletin No. 4, Washington, 1893; 103 pp., 16 plates.

- I. *Moniezia* (Blanchard) which falls naturally into three groups:
 - a. The *Planissima* group, with linear interproglottidal glands.
 - b. The *Expansa* group with interproglottidal glands grouped around blind sacs.
 - c. The *Denticulata* group, without interproglottidal glands.
2. *Thysanosoma* (Diesing), single uterus with ascon-shaped egg-sacs. Genital canals pass between longitudinal canals.
3. *Stilesia* (Railliet), for *Taenia globipunctata* and, provisionally, *T. centripunctata*.
4. Species inquirendæ.

In the special part of the genus *Moniezia* is considered first and most fully. Its three subgenera depend upon the presence and arrangement of the interproglottidal glands first described by Dr. Stiles. These are absent in one subgenus; in the second they form a deeply colored line in the stained specimen near the posterior edge of the proglottids, and finally in the third subgenus they are localized around blind sacs which open between the proglottids. For particulars of each species the original paper should be consulted; it gives under each a full synonymy with a valuable list of hosts and of the geographical distribution so far as known, a bibliography of the species, a historical review and a detailed account of the anatomy. This is followed by a specific diagnosis based on the anatomical description and a statement with regard to the collections in which type specimens may be found.

Among interesting details in the genus *Moniezia* may be mentioned that on the right side the vulva is ventral, the cirrus dorsal, while on the left the reverse position obtains. New are the species *M. planissima*, *M. trigonophora* and *M. oblongiceps*. The systematic position of *M. benedeni* and *M. Neumannii* does not seem to have been satisfactorily ascertained since the material at hand failed to yield good preparations; Dr. Stiles refers them, however, to the *Planissima* group.

By examining some of the original specimens from Rudolphi's collection, the exact limits of *M. expansa* (*Taenia exp. Rud.*) were determined. It is evident that most helminthologists have included more than one species in their descriptions. The old genus *Thysanosoma* (Dies.) is reestablished to include the form subsequently named by Diesing *Taenia fimbriata*, and *T. giardii* Riv. Of especial interest may be mentioned the presence of two transverse canals in *Th. actinoides*. The necessity of a new genus for *T. globipunctata* and *T. centripunctata* was pointed out by Stiles in his preliminary; meantime

Railliet had reached the same conclusion independently and formed for them the genus *Stilesia*. Its anatomy is discussed here.

Part IV, the discussion of species inquirendæ, is followed by a short half page on the life history, and two pages of general conclusions. Here is included a key for the determination of species. It is undoubtedly more difficult to use than those of Moniez or Neumann, and on that account will no doubt be criticized and perhaps disregarded by some; it is, however, more accurate and allows a determination of the species as well as the genus, which heretofore has not been possible. Part VII is a valuable compendium of species according to hosts with commendable cross references. In the addenda the fact of the gradual failure of the interproglottidal glands to stain as the material macerates, and the consequent possible identity of some species are discussed.

The bibliography given is very full and under each title is a word or two of valuable explanation. Yet it is on the whole the least satisfactory part of the paper. One could wish that the authors had used a better system of reference than by numbers; these differ of course in the bibliography of each species and in the general list, and the confusion could not but lead to mistakes. Had the year system been used, references would have been alike for all lists, and such an error as is noted on p. 32, where "my note (26)" refers actually to a book by Dewitz, would not have been possible. Apart from the system, however, some omissions are noted. Thus on p. 26, and again on p. 42, in the synonymy, Blainville is quoted "after Baird, 1853," but neither name can be found in the general or in the special bibliographical list. The same can be said of Mégnin p. 87. The habit of scattering references at the bottom of the page (p. 66), or through the text (p. 72), also seems open to criticism.

These are, however, but slight defects in a work which is on the whole so worthy of high praise. As the first scientific study of taxonomical helminthology which has been made in this country, it is fitting that it should have emanated from the zoologist of the Bureau of Animal Industry. It is, to be sure, purely scientific work; but its practical and economic value are correctly insisted upon by the Chief of the Bureau in his letter of transmittal already quoted. The Bureau is to be congratulated also upon the general appearance of the bulletin and especially upon the sixteen fine plates which are the work of its artist, Mr. Haines.

The Bureau does great service in offering to museums and private collections well preserved specimens of these tape-worms in exchange.

Of equal value is the exhaustive card catalogue of parasites and hosts kept by the Bureau. It is freely at the disposal of scientific workers, and by means of it one can refer to a desired species or to the entire literature on any parasite. Such an undertaking would be impossible save in the great libraries of the world, among which those at Washington are rated. Any one who, like the reviewer, has had occasion to refer to this catalogue, will appreciate its value and will join in wishing that such work may be long continued under the patronage of our Department of Agriculture.

HENRY B. WARD.

Clark's Microscopical Methods.²—This volume is hardly up to the times, being apparently the production of a man ignorant of modern methods of microscopical research. Thus we note an utter absence of any reference to such fundamental matters as serial sections, staining on the slide, the use of any fixing and hardening reagents except alcohol. We meet continually sentences like this "It is to be understood that the somewhat complicated processes of imbedding in paraffin and colloidin are not recommended for general use." We can say the same of the book.

Dodge's Practical Biology.³—To the long list of laboratory guides, the new year adds another. Professor Dodge has had considerable experience in teaching both high school (Detroit) and college (Rochester Univ.) classes and this work is the outcome of his experience. It is, as its name indicates, a guide to biology. It takes up first, the biology of the cell, treating of unicellular organisms and cells from the tissues of higher forms and then later, not in the sandwich manner but in the sequence which most teachers would adopt, takes up first the animals and second the plants. The directions for laboratory work are well and carefully drawn, and, a point which we note with pleasure, the student is told what to look for, not what he will find. He cannot answer the questions without recourse to the specimens, while the absence of illustrations renders it impossible for him to copy the diagrams in the book. Not only is structure studied, but, to such extent as is possible with the average student and with average facilities, the physiology as well.

²Practical Methods in Microscopy, by Charles H. Clark. Boston, D. C. Heath & Co., 1894, 120 pp., XIV+219.

³Introduction to Elementary Practical Biology. A laboratory guide for high school and college students, by Charles Wright Dodge. New York, 1894. 120 pp., xxiii, 422.